



Case Report

Carotid sheath haematoma: A case report

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ABSTRACT

Carotid sheath haematoma is a rare finding, sometimes the only injury found in cases of manual strangulation without any associated external or internal injury to the neck. One such rare case is reported in an 8 year old female victim where presence of carotid sheath haematoma not only helped to ascertain the cause of death but also helped in the reconstruction of mechanism of infliction of force on the neck.

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1. Introduction

Carotid artery is situated deep in the neck in close vicinity to cervical vertebra behind the superficial strap muscles of the neck; therefore injury to carotid artery without any injury to subcutaneous tissues and intervening strap muscles of neck is rare. Common carotid artery is contained in the carotid sheath along with the vagus nerve and the internal jugular vein. It passes obliquely upwards and slightly laterally from behind the sternoclavicular joint to the level of upper border of thyroid cartilage (at the level of 4th cervical vertebra). Carotid artery injuries with transverse intimal tears are encountered in hanging due to suspension force resulting in stretching of neck structures.¹ But Carotid sheath haematoma is a rare finding seen due to the compression of carotid artery against the body of the vertebrae in case of throttling and signifies the direction of application of the force and also helps in reconstruction of crime.

2. Case report

Dead body of an 8 year old girl was found hidden in the box of a bed in the servant quarter of a house, covered by quilt. As per the parents the girl was missing since few hours. Police suspected the domestic help for committing rape and murder since he was absconding. The medico legal autopsy was conducted at the mortuary of Gandhi Medical College, Bhopal.

3. External examination

The face was congested with subconjunctival petechial haemorrhages. Some dry clotted blood was present around nostrils. The lips and nails were cyanosed.

Few faintly visible abrasions were found over the back on both scapular regions. Local examination of vagina revealed contusion with tear over 7 and 10 o'clock position of hymen in vagina confirming the suspicion of sexual assault. No other external injuries were found on the body. Rigor mortis was present all over the body and hypostasis was fixed on the back.

4. Internal examination

Internal examination revealed findings of asphyxia. Organs were markedly congested. Blood had increased fluidity. On dissection of neck, the superficial muscles of the neck (infra hyoid muscles) showed no signs of contusion or any injury and appeared healthy. No local finding pointing towards the cause of asphyxia could be ascertained and externally also there was no sign of any abrasion or contusion over the neck region. The findings so far pointed towards suffocation as the cause of asphyxia.

But on careful and layer by layer deeper dissection, carotid sheath haematoma was found on right side of neck 1.5 × 0.5 cm vertical at level of C5–C6 vertebra (Fig. 1).

Posterior surface of larynx revealed petechial haemorrhage all over and few haemorrhagic spots were also seen over posterior aspect of thyroid cartilage, larynx and tongue (Fig. 2). Mucosa of larynx showed petechial haemorrhage below the level of vocal cord.

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Fig. 1. The photograph showing carotid sheath haematoma on right side, while the surrounding neck structures are devoid of any ecchymosis.



Fig. 2. The photograph showing petechial haemorrhage on posterior aspect of larynx.

On the basis of the above findings the cause of death was finally opined as “Death due to asphyxia as a result of throttling with evidence of sexual assault. Death homicidal in nature and the duration of death within 24 h since post-mortem examination.”

5. Discussion

Gordon² has mentioned about the non-specific general pathologic changes of asphyxia and specific pathologic changes which point towards the cause of asphyxia. The non specific changes of Visceral congestion, petechial haemorrhages, cyanosis, condition of post-mortem fluidity of blood and cardiac dilation are considered to be pathognomonic of Asphyxia. The specific signs in case of throttling which are well studied and commonly seen include external injury to the skin, macroscopic hyoid or laryngeal fractures, haemorrhages of neck muscles, subconjunctival or facial petechiae. Other findings which are commonly observed but less studied are laryngeal microfracture, and findings of intracartilag-

enous laryngeal haemorrhage associated with subepithelial laryngeal haemorrhages and intralaryngeal muscular haemorrhages.^{3,4} Other less common findings include haemorrhage under the capsule and substance of submandibular gland and fracture of laryngeal cartilages unless ossified. Findings of laryngeal mucosal haemorrhage, ecchymosis, petechial haemorrhage,⁵ and large bleeding of larynx and cervical muscles,⁶ have also been reported. Adebahr⁷ reports absence of cyanosis, petechiae or haemorrhage into soft tissue of muscles of neck after strangulation if severe bleeding or anaemia were present.

In the present case, presence of all typical non-specific pathologic changes indicated the presence of asphyxia. But lack of overall specific pathologic changes led to speculation of suffocation as cause of death until the rare but interesting finding of carotid sheath haematoma was elicited on deeper dissection of neck. The degree of external and internal injuries produced by manual strangulation varies greatly from case to case and it depends mainly on direction of application of pressure, resistance offered by the victim, suddenness of death and the manner in which the neck is compressed.

In the above case injury to the deep structures of neck without injury to intervening and superficial structures was seen. As the victim was a small child, the resistance offered by the neck muscle towards compression was minimal. Secondly the presence of carotid sheath haematoma and petechial haemorrhage on posterior aspect of neck tissue points towards the pincer like holding mechanism of neck by the assailant providing posteromedial force by the pressure of his finger and thumb against cervical spine. The relative disproportion of an adult hand on a child's neck could have aided this pincer like holding, while trying to prevent the child from making any noise during sexual intercourse.

When intense pressure was applied by the fingertips, the pressure was transmitted from them across the muscles up to the cervical vertebra. This resulted in crushing of the tissues (carotid sheath) caught between the fingertips and the body of the vertebra. Carotid sheath is continuous with the deep cervical fascia which is composed of loose cellular tissue, but the part surrounding the artery is thicker and denser than the rest.⁸ The fingertips being soft and the muscles of intervening soft tissues did not get damaged due to their soft and supple character. In this particular case the girl being young, all her body tissues were not only soft but flexible and hence escaped damage from the transmitted force of fingers between the muscles and the trachea but when the applied pressure was obstructed by hard structure (body of vertebra) it resulted into condensation of pressure at that point which caused damage to carotid sheath. Compression of carotid sheath may also have lead to cardiac arrest and hence sudden death which is a very rare occurrence. This suddenness of death could be the one of the reason that no superficial injuries could be seen on the neck tissues.

Therefore it is not necessary that in every case of throttling, the internal injuries have to be associated with external injury. The meticulous autopsy in cases like this not only elicits rare findings like carotid sheath haematoma in absence of other local finding of asphyxia, but also helps in reconstruction of the crime and ascertain the direction of application of the force.

Conflict of Interest

None declared.

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Ethical Approval

None declared.

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